Karolinska Institutet

Institutionen för Fysiologi och Farmakologi

The Rapid Response System - effects of early identification and treatment of physiological instability

AKADEMISK AVHANDLING
som för avläggande av medicine doktorsexamen vid Karolinska Institutet offentligen försvaras i Nanna Svartz auditorium, Karolinska Universitetssjukhuset Solna

Fredagen den 31 maj 2013 kl 09.00

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Stockholm 2013

ABSTRACT

Adverse events occur to hospital patients, with potentially fatal consequences. Unfortunately, preceding warning signs are not always recognized and acted upon correctly. There exists a mismatch between patients' needs and the resources available in general wards. Hospital structures need to be developed to provide systematic approaches to find and treat deteriorating ward patients before their condition becomes irreversible. The Rapid Response System (RRS) is one such approach, a complex interventional framework that extends critical care to patients with sudden deterioration, wherever they are located in the hospital.

A team dedicated to this process, the Rapid Response Team (RRT), or in Swedish: *Mobil Intensivvårds Grupp (MIG)* was introduced at the Karolinska University Hospital Solna in March 2005. The team is composed of a physician and nurse from both the intensive care unit and the ward. Together they convene bedside when a patient fulfills predefined physiological criteria based on easily measured vital signs. The system provides hospital staff with the tools to recognize early signs of clinical deterioration and prompt access to critical care expertise in an effort to improve the process of care and overall safety for hospital patients.

The aim of this thesis was to evaluate the effects that the RRT has had at Karolinska on several levels: the reduction of cardiac arrests and hospital mortality, the detection of patients in need of a higher level of care and the role that the RRT plays in ethical decisions on patient care.

The implementation of the RRT was associated with a decrease in both cardiac arrests and overall adjusted hospital mortality. The patients who appeared to benefit most from the system were medical patients and surgical patients that did not undergo surgery. The RRT was able to detect vulnerable patients, predominantly those of older age with multiple co-morbidities who are at high risk of unrecognized events. We explored the concept of the deteriorating ward patients also in another setting and found that the problem is of similar characteristics and magnitude in Sweden as well as in Australia. The majority of patients examined by the RRT could continue treatment in general wards but around ¼ of the patients were in need of a higher level of care. We examined the two modes of admission into intensive care from general wards and describe that the RRT detected complex patients at the wards to a greater extent than did the traditional triage system. Severe sepsis was the condition most often identified by the RRT, a condition that benefits greatly from early detection. Finally, we found that the RRT is frequently involved in discussions and decisions concerning end-of-life care.

Key words: rapid response system, rapid response team, medical emergency team, cardiac arrest, mortality, limitation of medical treatment

ISBN 978-91-7549-115-8